CHAPTER 5.0 FUTURE SOCIOECONOMIC AND TRAFFIC CONDITIONS

This chapter evaluates the future roadway needs of the study area. Two horizon years were developed for the study – 2030 and 2030 Beyond. In order to identify at what levels and in what locations of the planning area traffic conditions would be most influenced, population and employment projections for the two future horizons were collected and implemented into the model. Additionally, to accurately represent the future roadway network, the Wasatch Front Regional Transportation Plan: 2007-2030 (2030 RTP) was used for the area east of SR 111. The model also included the projected roadway system for land owned by Kennecott Land west of SR 111. Using the West Bench Model, the team forecasted future travel demand in the study area for both horizon years. The 2030 and the 2030 Beyond daily traffic volumes were then compared to the capacity of the roads in the base network to identify roadway capacity needs using the screenlines. Additionally, a travel time comparison of the 2005, 2030, and 2030 Beyond on selected routes was performed to obtain an order of magnitude of future congestion.

5.1 FUTURE SOCIOECONOMIC ENVIRONMENT

The 2030 base socioeconomic data for this study was developed using the 2030 socioeconomic data adopted by the Wasatch Front Regional Council (WFRC) for the area east of SR 111 and adding the 2030 Kennecott Land projected growth west of SR 111.

The 2030 Beyond scenario was created to provide a longer planning timeframe and to solicit input from local jurisdictions that would be unhindered by the population control total constraint that the WFRC must maintain during the long-range plan development. To collect this information, the individual jurisdictions were provided with Transportation Analysis Zone (TAZ) maps containing the 2030 WFRC population and employment projections. The jurisdictions were then asked to revise the data based on their adopted general land use plans. Each jurisdiction was also asked to provide a horizon year for the data they provided. In most circumstances, each jurisdiction indicated that build-out would likely occur by 2030. Table 5-1 provides an overview of the future population growth; Table 5-2 identifies the employment projections.

Table 5-1. Future Population Data Comparison

	2005 Population	2030 Population	2005-2030 % Growth	2030 Beyond Population	2030-2030 Beyond % Growth
Planning Area	465,393	806,390	73.27%	1,041,335	29%

Table 5-2. Future Employment Data Comparison

	2005 Employment	2030 Employment	2005-2030 % Growth	2030 Beyond Employment	2030-2030 Beyond % Growth
Planning Area	177,273	339,857	91.71%	377,771	11%

Figure 5-1 and Figure 5-2 illustrate the future population density within the study area for the different future horizon years.

Figure 5-3 and Figure 5-4 illustrate the future employment distribution within the study area for the different future horizon years. It is important to note that there was little difference in overall growth between the 2030 Beyond and the WFRC 2030 socioeconomic data. The difference actually occurred in the distribution of the growth and the specific amount at various locations.

Figure 5-1. 2030 Population Density

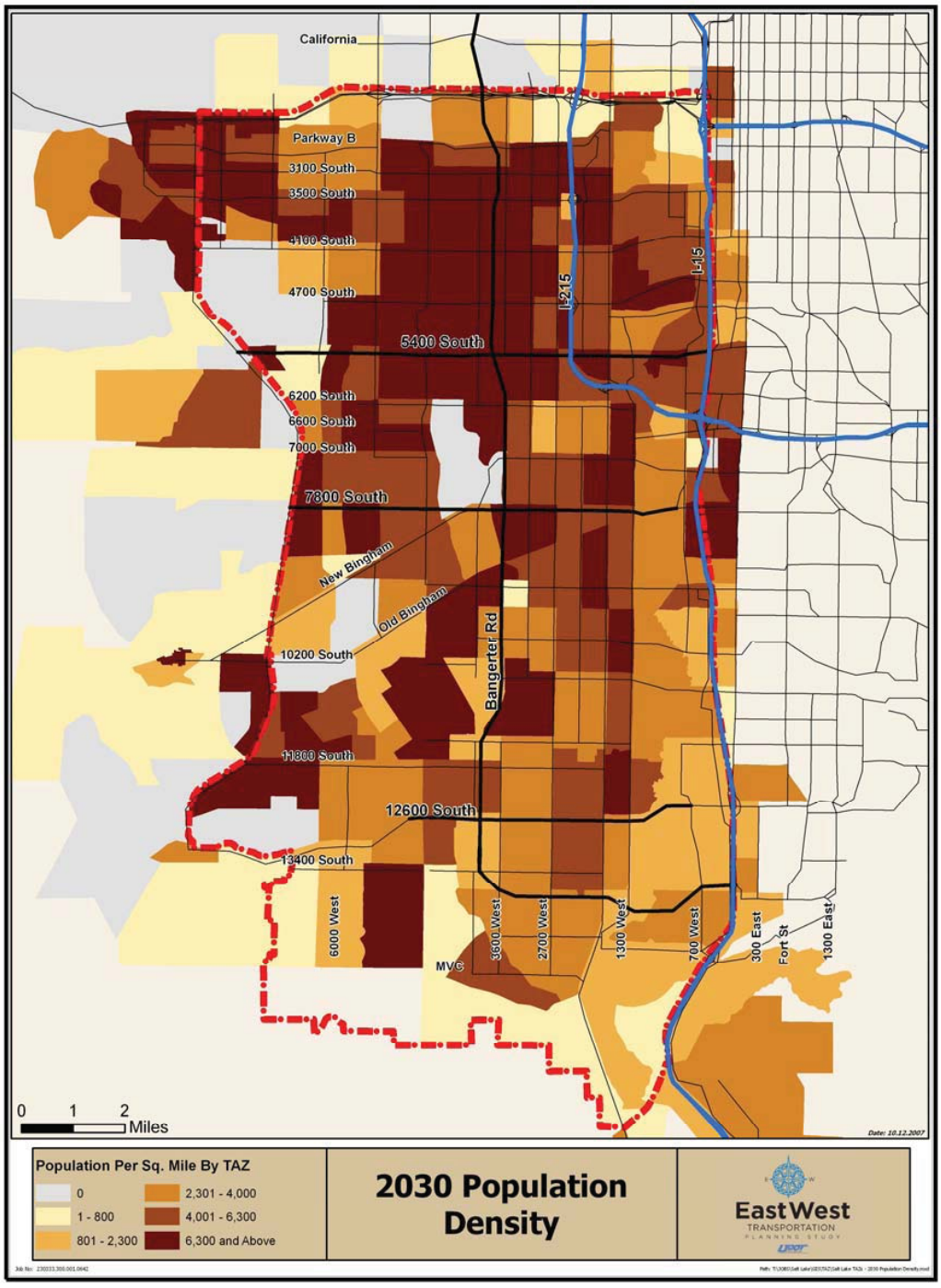


Figure 5-2. 2030 Beyond Population Density

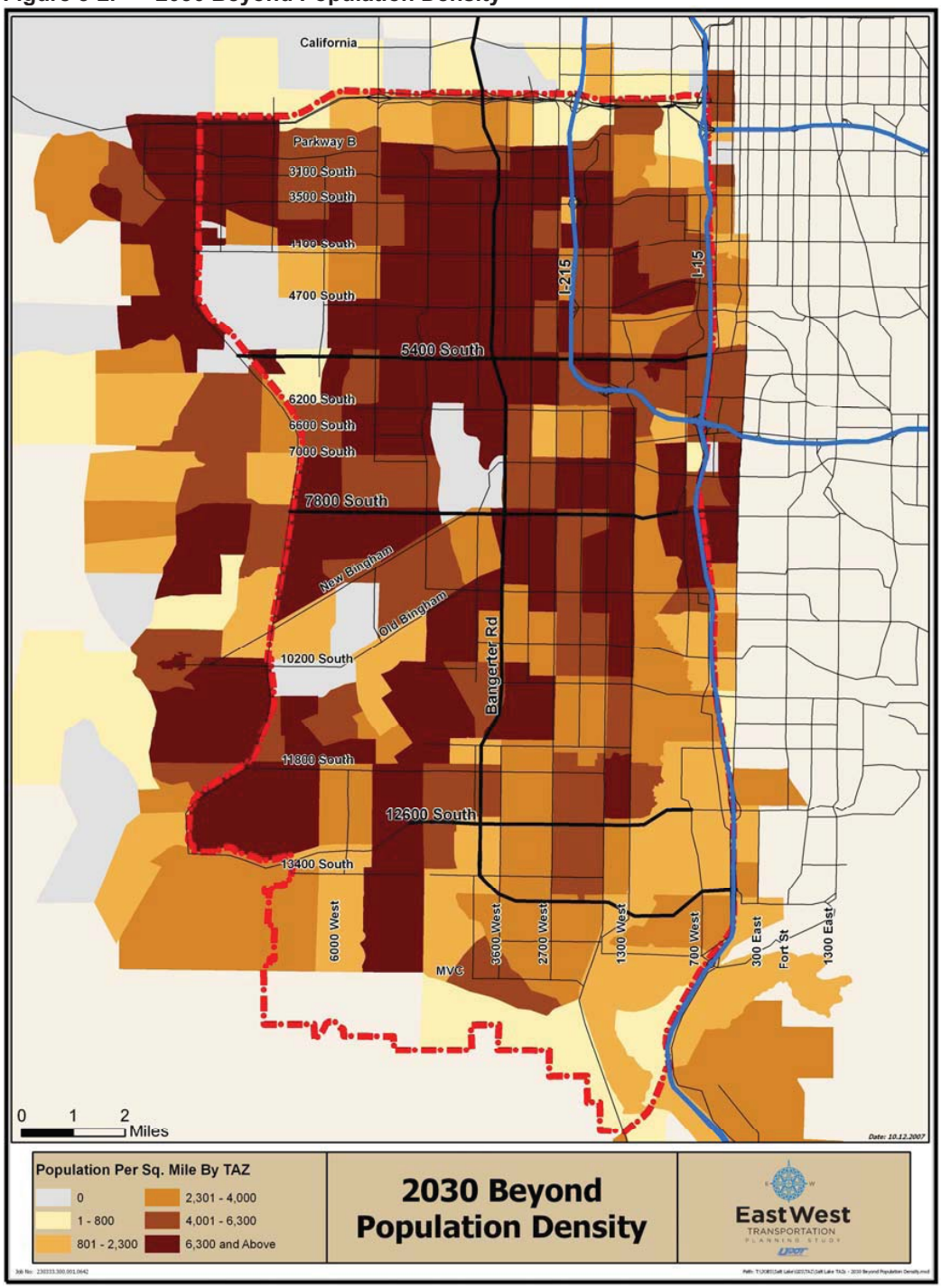


Figure 5-3. 2030 Employment Density

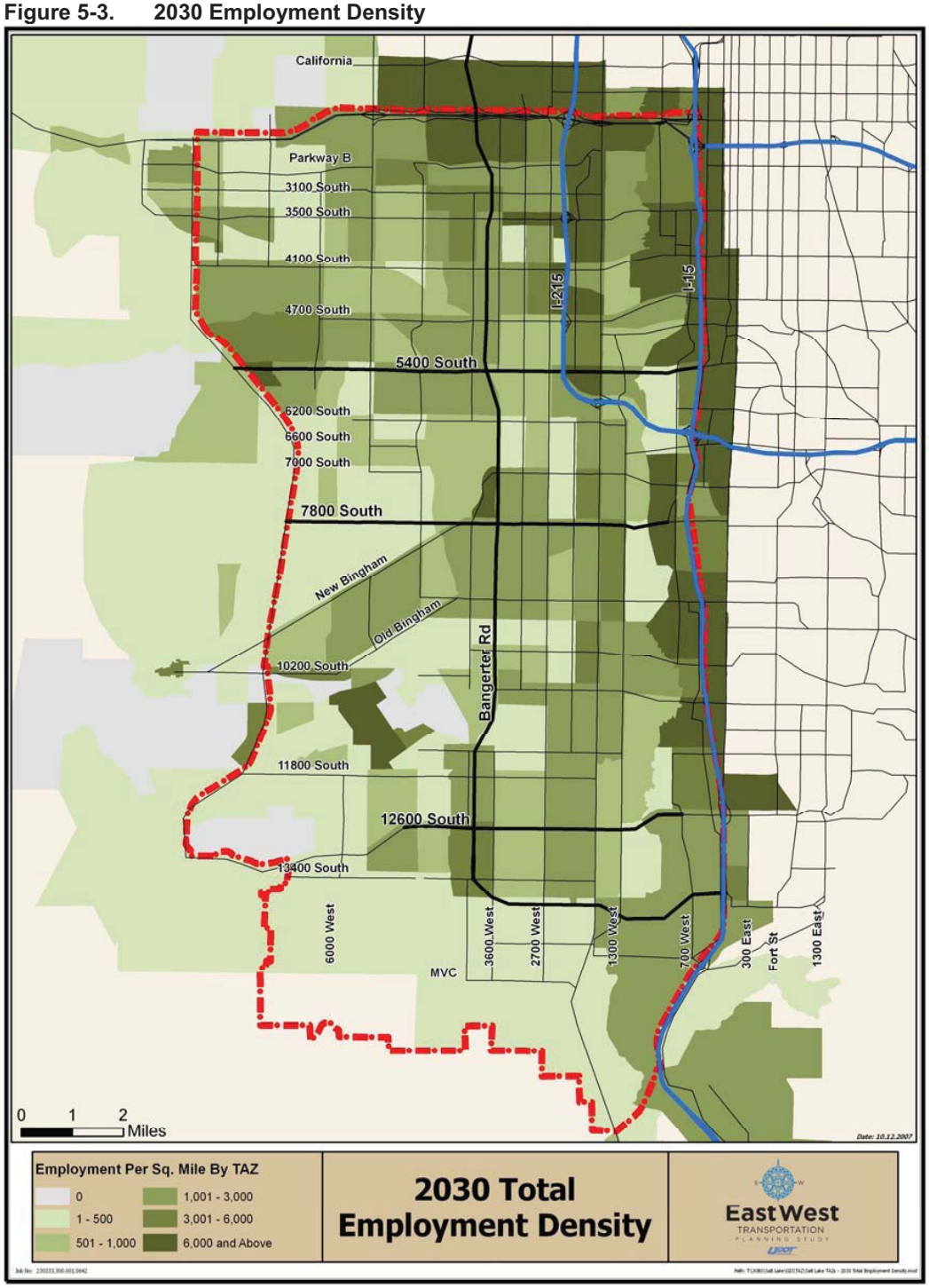
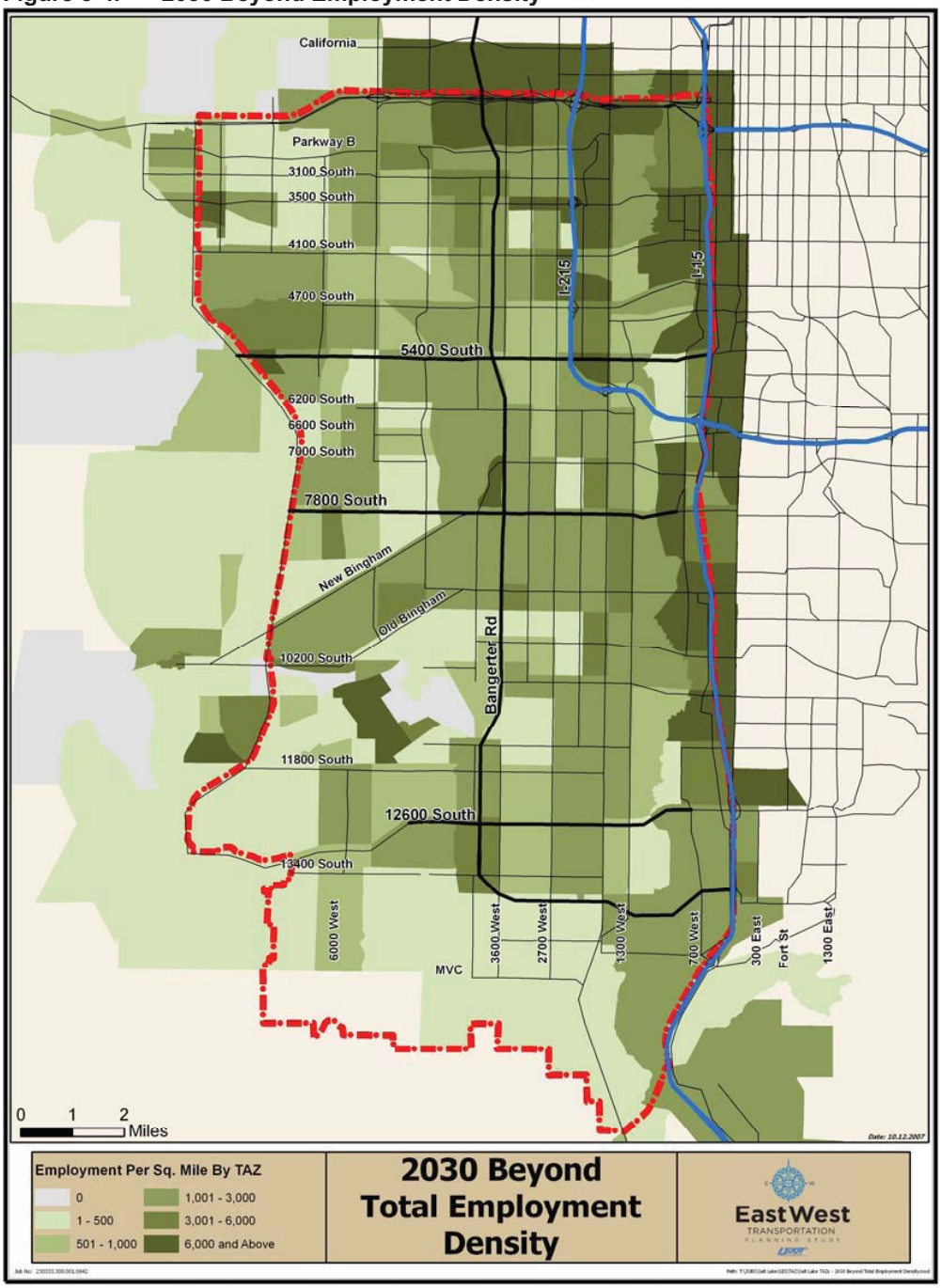


Figure 5-4. 2030 Beyond Employment Density



5.2 Future Roadway and Traffic Conditions

The base 2030 roadway network comprises the *2030 RTP* improvements east of SR 111 and the planned Kennecott Land roadway system west of SR 111. Figure 5-5 shows the 2030 roadway network number of lanes and Figure 5-6 shows the 2030 functional classification for the base 2030 roadway system. For the future condition assessment, the 2030 Beyond model network is consistent with the 2030 model network.

5.2.1 Roadway Characteristics

For the 2030 base roadway model, the Mountain View Corridor was added to the study area as six-lane freeway. The addition of this parallel route resulted in the reclassification of SR 111 from a highway to a principal arterial. In addition, a large roadway network expansion for Kennecott Land's area was added to the 2030 model west of SR 111. These additional roadways were mainly classified as collectors and minor arterials and were mainly four-lane and six-lane facilities, with some two-lane facilities. SR 201 was increased from a four-lane roadway to a six-lane roadway. Additionally, many of the roadways were widened to six-lane facilities, including the entire lengths of Bangerter Highway and Redwood Road.

For the 2030 modeled year, Mountain View Corridor was added to the study area with a designated posted speed between 55 and 65 mph. SR 111's designated posted speed was reduced from between 55 to 65 mph to 45 to 50 mph. On a majority of the routes, designated posted speeds were increased from 35 to 40 mph to 45 to 50 mph.

5.2.2 Traffic Volumes

Future screenline volumes represent a clear indication of the growth in total trips in the general area of the screenline. Daily traffic volumes reported from the West Bench 2030 and 2030 Beyond travel demand model for each roadway along each of the nine screenlines were summarized and are detailed in Appendix A. Growth factors were derived from a comparison of model runs for 2005 and 2030 Beyond. These growth factors were applied to the manually adjusted 2005 traffic volumes to develop 2030 Beyond traffic volumes for each roadway along the identified screenlines. The resulting adjusted total screenline volumes are displayed in Figure 5-5. It should be noted the total model screenline daily traffic volumes were maintained.

Figure 5-5. 2030 Base Roadway Number of Lanes

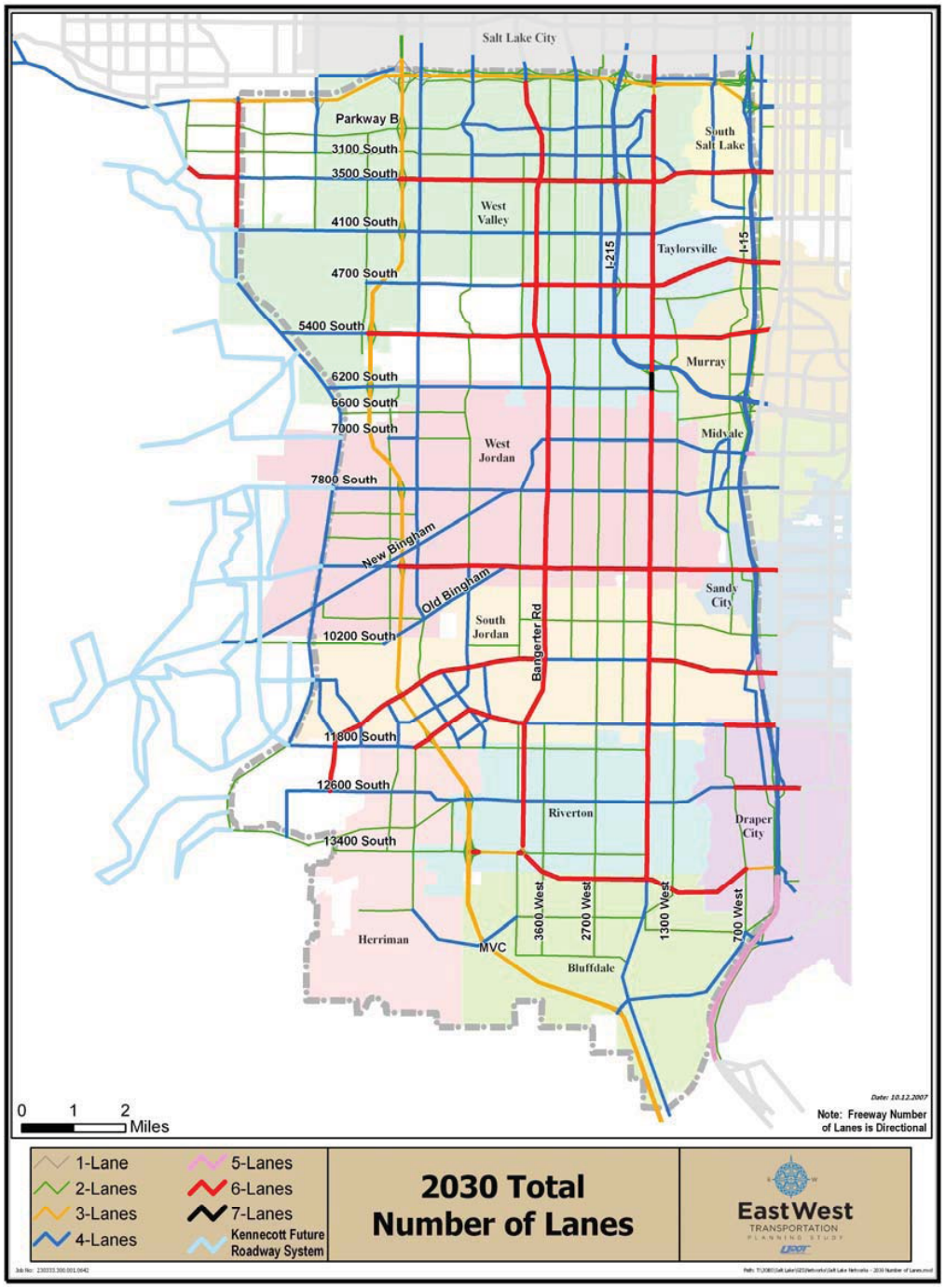
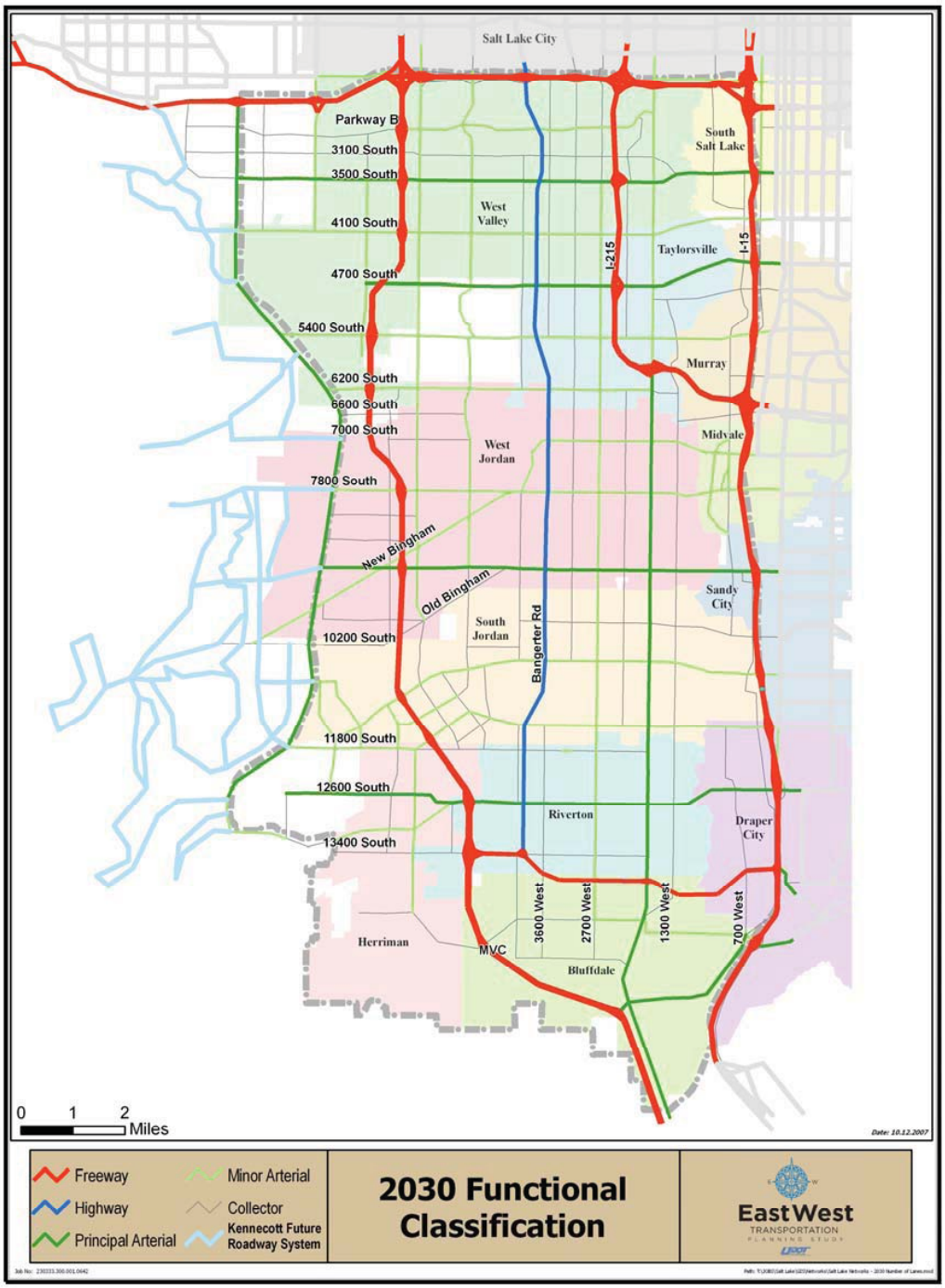


Figure 5-6. 2030 Base Roadway Functional Classification



The resultant 2030 total daily north-south screenline traffic volumes are approximately two to five times greater than the 2005 total daily north-south screenline traffic volumes. The most significant north-south screenline traffic volume increase occurred at screenline N1, the westernmost north-south screenline, where the 2005 total daily screenline traffic volume is 129,639 vehicles per day and the 2030 Beyond total daily screenline traffic volume is 661,500. For the east-west screenlines, the 2005 to 2030 Beyond total daily traffic volume increases ranged from approximately 1.9 to 2.8, with the greatest increase occurring at the southern east-west screenlines (E4 and E5).

5.2.3 Level of Service Analysis (2030 and 2030 Beyond)

During the projected growth from modeled year 2005 to modeled year 2030 Beyond, projected congestion becomes increasingly apparent. More roadway segments are projected to operate at level of service (LOS) E/F throughout the entire study area, spreading west and south from the northeast corner. A review of the LOS data shows that:

- Twenty-one percent of the east-west facilities were highly congested in 2005, while 48 percent of the east-west facilities are projected to be highly congested at 2030 Beyond.
- Nineteen percent of the north-south facilities were highly congested in 2005, while 50 percent of the north-south facilities are projected to be highly congested at 2030 Beyond.
- The freeways are projected to fail, even with the addition of the Mountain View Corridor freeway.

The modeled 2030 Beyond projected operations are expected to vary slightly from the modeled 2030 operations, especially west of SR 111. This is due to the already congested conditions of the 2030 horizon year.

Table 5-3. Screenlines Total Daily Volumes Comparison

Screenline	2005 Daily Volume	2030 Daily Volume	2030 Beyond Daily Volume	Percent Change 2005-2030 Beyond
N1	129,639	643,700	661,500	410%
N2	240,163	755,100	764,200	218%
N3	324,478	1,035,100	1,040,400	221%
N4	460,981	956,000	960,100	108%
E1	453,031	811,100	851,300	88%
E2	456,326	806,600	846,700	82%
E3	324,744	672,200	715,200	120%
E4	264,062	689,500	734,900	178%
E5	131,373	345,600	362,400	176%

5.2.4 Daily VMT/VHT (2030 and 2030 Beyond)

By 2030, the total daily study area VMT is projected to be approximately 20,227,865, while the VHT is projected to be approximately 528,070, representing a VMT increase of approximately 250 percent and a VHT increase of approximately 300 percent when compared to the 2005 results. In the modeled year 2030, the freeway facility type still has the highest VMT/VHT, and the VMT/VHT for principal arterials is approaching levels closer to the minor arterials. Collector facilities also begin to indicate more VMT/VHT than highway facilities.

For 2030 Beyond, the total daily study area VMT was calculated to be approximately 21,094,231, with the VHT approximately 578,026, representing an increase of approximately 3 percent compared to the 2030 levels. The modeled year 2030 Beyond shares similar VMT/VHT characteristics by facility type to the modeled year 2030 findings. As indicated, the increased VMT and VHT resulted in a lower travel speed for all the facility types. See Table 5-4 and Table 5-5.

Table 5-4. 2030 Daily VMT and VHT by Functional Classification

	VMT	VHT	Average Speed
Freeways	12,085,011	250,230	48.30
Highways	1,016,075	26,737	38.00
Principal Arterials	2,411,935	78,646	30.67
Minor Arterials	3,209,850	110,257	29.11
Collectors	1,504,994	62,201	24.20
Study Area Total	**20,227,865**	**528,070**	**38.31**

Table 5-5. 2030 Beyond Daily VMT and VHT by Functional Classification

	VMT	VHT	Average Speed
Freeways	12,495,196	264,968	47.16
Highways	1,014,219	28,481	35.61
Principal Arterials	2,548,138	86,017	29.62
Minor Arterials	3,477,740	130,631	26.62
Collectors	1,558,938	67,929	22.95
Study Area Total	**21,094,231**	**578,026**	**36.49**

5.2.5 Travel Time

A travel time comparison was performed on selected routes within the study area for the 2005, 2030, and 2030 Beyond scenarios. The primary purpose of this exercise was to ascertain the order of magnitude of the increase in congestion, measured by travel time, between the horizon years. The routes were chosen to be representative of the travel between residential areas and activity centers, predominantly within the study area, and are shown in Figure 5-7. As illustrated, it was found that travel times on many routes will almost double by 2030. This increase is projected to happen despite several regionally significant improvements to the roadway network as planned in the *Wasatch Front Regional Transportation Plan: 2007-2030 (2030 RTP)*. For example, Bangerter Highway will remain six lanes from I-80 to 13400 South and be improved to a six-lane freeway from 13400 South to I-15. Despite these improvements, travel time between I-15 and I-80 using Bangerter Highway will almost double.

Increased travel time translates into congestion and mobility deficiencies in the study area. This establishes a need for additional improvements to those present in the *2030 RTP* in order to address future travel demand.

Figure 5-7. Travel Time Comparisons